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COMPOSITION OF ESSENTIAL OIL OF MELISSA (MELISSA OFFICINALIS L.).

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ANNOTATION

This article provides information about the origin, valuable composition and fields of application of the Melissa (Melissa officinalis L.) plant. Also, information on the composition and importance of essential oils of the melissa plant grown in Uzbekistan is covered.

Keywords

melissa, essential oil, biologically active substances, phenol compounds, vitamins, medicine, food industry, perfume industry, cosmetics industry.

INTRODUCTION. Belongs to the Melissa-Lamiaceae family and, according to scientific sources, includes 2 to 10 species. Among them, medicinal melissa (Melissa officinalis L.) originating from the Mediterranean Sea is valuable in terms of composition. The essential oil, biologically active substances, phenolic compounds, and vitamins contained in Melissa determine its biological value [2]. The chemical composition of melissa, especially the essential oil, varies depending on the region of its growth, according to scientists.

Melissa is widely used in medicine, perfumery, cosmetics and food industry in many countries of the world [3]. Melissa raw material has sedative, antispasmodic, immunomodulatory, antidepressant, antihistamine, antioxidant, anti-inflammatory and antimicrobial effects. In addition, Melissa is active against viral infections such as smallpox, influenza, and herpes [4].

STYLES. As an object of research, in August 2022, in Termiz district of Surkhandarya region, the above-ground part, flowers and leaves of the melissa crop (Dozya variety), which was introduced and cultivated in the territory of the "Scientific Research Institute of Vegetable Crops and Potatoes, Surkhandarya Scientific Experimental Station", were taken. Researches were conducted on the

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basis of the following methodological guidelines: GOST-34213. 2017 "Essential oil raw materials, floral and herbaceous", "Methods of sampling, determination of moisture, impurities and essential oil"[5]. A simplified method for determining the amount of essential oil in essential oils" [1], the analysis of the chemical composition of the obtained essential oils was carried out by the method of chromato-mass spectrometry at the Institute of Biorganic Chemistry of the Russian Federation FA.

PRESENTATION OF THE MAIN MATERIAL. It was found that 0.11% essential oils were present in the aerial parts and 0.03% in the leaves of Melissa plant after the flowering stage. Essential oils were extracted by hydrodistillation for 2 hours. Essential oils were in the form of a yellowish liquid with a characteristic smell.

The composition of essential oils extracted from the above-ground parts of the melissa plant grown under thermal conditions is presented in Table 1.

According to the results of the analysis, 87 substances were identified from the composition of essential oils extracted from the melissa plant at the observed time. The total amount of 87 identified substances was 98.8%.

Table 1.

COMPOSITION OF ESSENTIAL OILS EXTRACTED FROM MELISSA

№	P.T	The name of the component	CAS number	Quantity %%
1.	5.435	4a,8a-epoxynaphthalene, 1,4,5,8-tetrahydro	016573-72-1	0,19
2.	5.980	β-Terpinen	000099-84-3	2.09
3.	6.592	Benzenemethanol, 3,5-dimethyl-	027129-87-9	1,61
4.	6.788	2-amino-2-butenedinitrile	1000196-60-0	0,39
5.	7.196	4-tujanol	017699-16-0	2,06
6.	7.640	isoterpinoline	000586-63-0	0,23
7.	7.805	1,9-decadiine	001720-38-3	0,80
8.	8.950	1,5-cyclooctadiene, 1,5-dimethyl-	003760-14-3	2,53
9.	9.128	Spiro[bicyclo[3.1.0]hexane-2,1β-cyclopropane]	1000460-73-6	0,29
10.	24.665	2-hydroxymethyl-3-(methylthio)indole	1000432-93-1	0,64
11.	24.708	N-(4-fluorophenyl)-4,5-dimethylthiophene-2-carboxamide 1,1-dioxide	1000460-16-9	0,29
12.	24.882	Silanamine, H-[2,6-dimethyl-4-[(trimethylsilyl)oxy]phenyl]-1,1,1-trimethyl-	072088-09-6	0.25
13.	25.260	Silanamine, H-[2,6-dimethyl-4-[(trimethylsilyl)oxy]phenyl]-1,1,1-trimethyl	072088-09-6	0.17
14.	25.276	carbamic acid,	128897-40-5	0.18
15.	25.392	H-(4-methylphenyl)-oxiranylmethyl ether	002379-56-8	0.49
16.	25.590	2,3-dihydroxy-6-nitroquinoxaline	019095-23-9	0,78
17.	25.643	Heptasiloxane, 1,1,3,3,5,5,7,7,9,	000618-80-4	0.67

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18.	25.734	9,11,11,13,13-tetradecamethyl	1000316-17-5	1.14
19.	25.817	Phenol, 2,6-dicloro-4-nitro	339352-50-0	0.67
20.	25.847	1-indole-2-carboxylic acid, 6-(4-ethoxyphenyl)-3-methyl-4-oxo-4,5,6,7-tetrahydro-isopropyl ether	132118-31-1	2.04
21.	25.994	22-Pyridinamine	1000147-64-6	0.84
22.	26.027	Quinoline	072088-09-6	1.23
23.	26.238	2-p-Nitrophenyl-oxadiazole-	1000351-62-2	1.90
24.	26.291	1,3,4-bir e-5	018082-56-9	1.18
25.	26.343	Silanamine, H-[2,6-dimethyl-4-[(trimethylsilyl)oxy]phenyl]-1,1,1-trimethyl	139347-50-5	2.39
26.	26.460	[1,2,4]Triazolo[1,5-a]pyrimidine-6-carboxylic acid, 4,7-diidro-7-imino-, ethyl ester	146651-75-4	0.82
27.	26.488	3,3-diisopropoxy-1,1,1,5,5,5-hexamethyltrisiloxane	1000375-89-1	1.86
28.	26.601	Trimethylsilyl-di(thimethylsiloxy)silane	001873-88-7	2.03
29.	26.662	tert-butyl-2-aminophenylcarbamate	003555-45-1	0.73
30.	26.742	7,7,9,9,11,11-hexamethyl-3,6,8,10,12,15-hexaoxa-7,9,11-trisilaeptadecane	1000195-15-1	0.72
31.	26.765	Bis(trimethylsiloxy)methylsilane	025304-04-5	0.79
32.	26.821	Silicon acid, diethylbis (trimethylsilyl) ether	057707-09-2	1.31
33.	26.865	3,5-dimethylbenzaldehyde thiocarbamoylhydrazone	72088-09-6	0,87
34.	26.914	2-[4-cyclohexyl-butanoylamine]-3-chloro-1,4-naphthoquinone	000995-82-4	1,30
35.	26.993	Ethyl 4-([(E)-(2-nitrophenyl) methylidene]amino)benzoate	000995-82-4	0,87
36.	27.059	1-benzazirene-1-carboxylic acid, 2,5a-trimethyl-1a-[3-oxo-1-butenyl] perhydro-, methyl ester	1000197-90-8	1,36
37.	27.095	Trimethylsilyl 3-methyl-4-[(trimethylsilyl)oxy]benzoate	1000378-73-2	1,1
38.	27.168	4-furo[3,2-b]pyrol-5-carboxylic acid, 4-(2-oxopropyl)-	1000318-88-7	1,02
39.	27.216	7,7,9,9,11,11-hexamethyl-3,6,8,10,	1000375-89-1	2,17
40.	27.325	12,15-hexaoxa-7,9,11-trisyl heptadecane	019095-23-9	1,13
41.	27.421	Heptasiloxane, 1,1,3,3,5,5,7,7,9,	018082-56-9	2,60
42.	27.528	9,11,11,13,13-tetradecamethyl-	000995-82-4	3,30
43.	27.598	3,3-diisopropoxy-1,1,1,5,5,5-hexamethyltrisiloxane	1000375-89-1	0,48
44.	27.662	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-	1000375-89-1	0,48
45.	27.737	7,7,9,9,11,11-hexamethyl-3,6,8,10,12,15-hexaoxa-7,9,11-trisilaeptadecane	019095-24-0	1,33
46.	27.818	7,7,9,9,11,11-hexamethyl-3,6,8,10,12,15-hexaoxa-7,9,11-trisilaeptadecane	319914-15-3	1,33

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47.	27.949	Octasiloxane, 1,1,3,3,5,5,7,7,9,	1000397-43-6	1,51
48.	27.976	9,11,11,13,13,15,15-hexadecamethyl-	1000375-89-1	1,97
49.	28.101	3-ethoxyphenylacetone hydroxyoxime	1000351-62-2	1,11
50.	28.136	benzoic acid, 4-[[(trimethylsilyl) oxy]methyl]-, trimethylsilyl ether	055517-36-7	0.64
51.	28.170	7,7,9,9,11,11-Hexamethyl-3,6,8,10, 12,15-hexaoxa-7,9,11-trisyl heptadecane	1000190-47-3	0.90
52.	28.205	[1,2,4]Triazolo[1,5-a]pyrimidine-6-carboxylic acid, 4,7-diidro-7-imino-, ethyl ester	000995-82-4	0.40
53.	28.234	Phenylglyoxylic acid, TMS gosilasi	001000-05-1	1.02
54.	28.288	(tert-Butyldimethylsilyl)	1000316-17-5	0.85
55.	28.349	[2-methyl-2-(4-methyl-pent-3-enyl)-cyclopropyl l]-methanol	050593-73-2	1.75
56.	28.406	Hexasiloxane, 1,1,3,3,5,5,7,7	000995-82-4	0.91
57.	28.459	,9,9,11,11-dodecamethyl-	1000375-89-1	0.60
58.	28.489	tetrasiloxane, 1,1,3,3,5,5,7,7-octamethyl	1000375-89-1	0.66
59.	28.536	1-indole-2-carboxylic acid,	019095-24-0	0.78
60.	28.561	6-(4-ethoxyphenyl)-3-methyl-4-oxo-4,5,6,7-tetrahydro-isopropyl ether	1000433-29-9	0.34
61.	28.609	Quinoline, 4-chloro-6-methoxy-2-methyl	000995-82-4	1.41
62.	28.652	Hexasiloxane, 1,1,3,3,5, 5,7,7,9,9,11,11-dodecamethyl-	1000147-64-6	0.71
63.	28.684	7,7,9,9,11,11-hexamethyl-3,6,8, 10,12,15-hexaoxa-7,9,11-trisilaeptadecane	1000375-89-1	2.79
64.	28.914	7,7,9,9,11,11-hexamethyl-3,6,8,10,12,15-hexaoxa-7,9,11-trisilaeptadecane	013337-66-1	2.95
65.	29.076	Octasiloxane, 1,1,3,3,5,5,7,7,9,9, 11,11,13,13,15,15-hexadecamethyl	1000431-97-0	0.56
66.	29.116	4,6-diformyl-2,5-dimethoxytropone	072088-09-6	0.71
67.	29.249	Hexasiloxane, 1,1,3,3,5,5,	1000285-93-3	2.33
68.	29.279	7,7,9,9,11,11-dodecamethyl-	000995-82-4	0.66
69.	29.338	2-p-nitrophen-oxadiazole-1,3,4-one-5	300862-83-3	2.36
70.	29.429	7,7,9,9,11,11-hexamethyl-3,6,8,10,12,15-hexaoxa-7,9,11-trisyl heptadecane	037945-37-2	0.76
71.	29.458	7-chlorosynchonine acid	319914-15-3	0.92
72.	29.534	Ethyl 4-benzoyl-3 3,5-dimethylbenzoate	002379-56-8	1.35
73.	29.573	Silanamine, H-[2,6-dimethyl-4-[(trimethylsilyl)oxy]phenyl]-1,1,1-trimethyl	000995-82-4	1.85
74.	29.677	2-(acridin-9-ylamino)-3-methylbutyric acid	330455-64-6	1.14
75.	29.712	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl	000995-82-4	0.91
76.	29.776	H-(4-isopropylbenzyl)-3-phenylpropionamide	000995-82-4	0.96
77.	29.827	3-methylindole-2-carboxylic acid, 4,5,6,7-tetrahydro-, ethyl ester	1000375-89-1	0.98

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78.	29.922	3-ethoxyphenylacetone hydroxyoxime	055429-29-3	2.14
79.	30.024	2,3-dihydroxy-6-nitro-quinoxaline	000995-82-4	0.66
80.	30.062	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9, 11,11-dodecamethyl	1000375-89-1	1.01
81.	30.139	Timol, TBDMS gosilasi	072182-11-7	1.84
82.	30.284	Hexasiloxane, 1,1,3,3,5,5,7,	019095-23-9	0.53
83.	30.341	7,9,9,11,11-dodecamethyl	000995-82-4	0.93
84.	30.421	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9, 11,11-dodecamethyl-	055042-78-9	0.59
85.	30.486	7,7,9,9,11,11-hexamethyl-3,6,8,10,12,15-hexaoxa-7,9,11-trisilaeptad	001873-88-7	0.63
86.	30.525	Arsene acid, tris(trimethylsilyl) ester	000493-49-2	0.67
87.	30.571	Hexasiloxane, 1,1,3,3,5,5,7,	1000395-75-7	0.36
Total:				**98,8**

CONCLUSION. Among the total identified substances, the amount of 17 substances exceeded 2%: β-Terpinen-2.09%; 1,5-cyclooctadiene, 1,5-dimethyl-2.53%, Heptasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13-tetradecamethyl-2 ,84%, Quinoline 2.04%, Silanamine, H-[2,6-dimethyl-4-[(trimethylsilyl)oxy]phenyl]-1,1,1-trimethyl-2.52%, [1,2, 4]Triazolo[1,5-a]pyrimidine-6-carboxylic acid, 4,7-dihydro-7-imino-,ethyl ether-3.01%, 3,3-diisopropoxy-1,1,1,5, 5,5-hexamethyltrisiloxane-3.78%, Trimethylsilyl-di(thimethylsiloxy)silane 2.39%, 7,7,9,9,11,11-Hexamethyl-3,6,8,10, 12,15-hexaoxa -7,9,11-trisyl heptadecane-13%, Bis(trimethylsiloxy)methylsilane-2.66%, Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11- dodecamethyl-14.16%, Octasiloxane, 1,1,3,3,5,5,7,7,9,9, 11,11,13,13,15,15-hexadecamethyl-2.11%, 3- ethoxyphenylacetone hydroxyoxime-2.25%, 7-chlorosynchonine acid and 2.95%, 2-(acridin-9-ylamino)-3-methylbutyric acid-2.33%; H-(4-isopropylbenzyl)-3-phenylpropionamide-2.36%, Arsen acid tris (trimethylsilyl) ester 2.14%.

These substances make up 65.16% of the total components and mainly have a positive effect on the human body. In particular, 7,7,9,9,11,11-hexamethyl-3,6,8,10,12,15-hexaoxa-7,9,11-trisila-heptadecan is a guarantee of the quality of food and cosmetic products, because they protect the body from many diseases and improve lifestyle [6].

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